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AGRICULTURE

No. 162

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I. GENERAL INFORMATION

INCREASE IN AMOUNT OF SINGLE CROP RICE GROWING

Fuzhou FUJIAN RIBAO in Chinese 4 Jul 81 p 1

[Article by Dong Diwei [5516 1593 0251], Provincial Department of Agriculture: "Single Crop Rice Expanded Over 190,000 Mu in Province; Adherence to Principle of Adapting General Methods to Local Situations in Spread of Superior Hybrid Varieties"]

[Text] Everywhere throughout the province this year there has been adherence to the principle of adaptation of general methods to local situations for the expansion of the single rice crop growing area. Statistics from provincial agricultural departments show plantings of mid-season and late season rice on 3.67 million mu in the province, 190,000 mu more than last year.

In the single rice crop growing prefectures of Jianyang and Longyan, emphasis has been given this year to single crop rice production as a major link in increasing grain output. Since April, the Provincial Department of Agriculture and some prefectures and counties that produce a lot of single crop rice have held single crop rice production conferences one after another in an effort to tap potential for increased output from the single crop of rice, and to raise yields per unit of area. Promotion of superior varieties has been a major action taken everywhere. According to statistics, the province already grows 1.83 million mu of hybrid rice, which is half the single rice crop area. During the past 2 years, Yongfu Commune in Zhangping County, located in the mountains at more than 700 meters above sea level, has gradually revived its single crop of rice, which had earlier been turned into two crops of rice. Last year, its grain production increased by more than 4.23 million jin, and most ricefields produced in a single crop an output greater than that of the former two crops. In order to increase per unit yields, this year the commune has launched a "Competition for the Very Best in Mid-Season Rice" movement, and a fine picture in production has appeared.

At the present time, everywhere in the province attention is being given to improved field care of single crops of mid-season and late rice, particular emphasis being given scientific fertilization and the eradication of disease and insect pests to win a bumper harvest from the single crop of rice.

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FUJIAN

CURRENT POLICIES LEAD TO IMPROVED INCOMES FOR PEASANTS

Fuzhou FUJIAN RIBAO in Chinese 12 Jun 81 p 1

[Article by Zheng Yizheng [6774 5030 2973] of the provincial agricultural committee: "Liberating Ideology, Liberalizing Policy, Suiting Measures to Local Circumstances, Developing Superiority; A Group of Rich Brigades and Production Teams Emerge in Our Province's Farm Villages"]

[Text] According to the most recent statistics compiled by the provincial agricultural committee, in 1980 there were 48 brigades and 285 production teams with an average personal income (distributed by the collective) of over 300 yuan in our province's farm villages, an increase of 5 to 12 times over the 8 brigades and 21 production teams in 1979. Among them, 5 brigades and 39 production teams had a per capita average distributed income of over 500 yuan. The per capita average distributed income of the Huiyao Brigade of Zhongcun Commune in Sanming city, was 580 yuan, and the per capita distributed income of the Xiaolangkeng production team of Erdu Brigade, Shuibei Commune, Shaowu County, was 1,202 yuan.

These rich brigades and production teams are distributed in the suburbs of Fuzhou city, in Huancheng Ward, in food-grain producing regions of each locality, in forest regions, fishery regions and centralized regions with economic crops. The emergence of these rich brigades and teams is the result of firmly implementing the policy, guidelines and principles of the Third Plenum by each locality: liberating ideology, liberalizing policy, suiting measures to local circumstances, developing superiority, and revitalizing the farm village economy. The characteristics are as follows:

First, a production responsibility system was instituted and established soundly. In particular, the joint production responsibility system fully mobilized the enthusiasm of the commune members to carry out collective production well. For example, the Liming Brigade of Hongshan Commune, Huancheng Ward in Fuzhou city produced mainly vegetables, and industrial and sideline production were relatively developed. Last year, this brigade implemented specialized production, and especially after specialized teams and groups implemented the joint production accounting responsibility system, commune members exerted efforts to increase the production of superior quality vegetables and found many ways to expand outlets for industrial and sideline industries; a new situation of "four increases" emerged, i.e., increase in yield, in contribution, in income, and in distribution. The per capita average income was 318 yuan and the savings of commune members reached over 215,000 yuan. The Commune members happily said: While in the past, the policies established at the beginning of the year changed color at the end of the year, the tasks were not completed and bonuses were sought to supplement expenditures, now the policies do what is promised, the indicators are realized, the collective is happy, and the commune members are rich.

Second, measures were suited to local circumstances and crop distribution was rationally readjusted according to the perrequisite of assuring increases in the total yield of food grains. Brigades and production teams mainly engaged in agricultural planting exerted efforts to develop many types of economic crops--oil-bearing crops, tea, fruits and peanuts--and realized double bumper harvests of food grains and economic crops while undertaking food grain production in accordance with production habits, labor forces, soil quality and technical conditions under the guidance of national plans. Caiban Brigade of Jiuhu Commune, Longhai County, paid attention to doing a good job of food grain production, and last year the per-mu yield of food grains reached 2,083 jin. It also paid attention to developing the superiority of planting narcissus: during the past 2 years, without affecting the production of food grains, 200 mu of land were readjusted for planting narcissus and a responsibility system was implemented. The income from narcissus reached over 600,000 yuan, or 74 percent of the income of the entire brigade, and the income per person was 446 yuan.

Third, measures were suited to local circumstances, the superiority of manpower resources and natural resources was fully developed, and diversification was carried out. The Tongmu Brigade of Xingcun Commune, Zongan County, in recent years fully developed the natural superiority of the locality and insisted on planting tea as the main crop and the policy of combining tea planting and agriculture. The production of tea developed greatly, the collective economy became richer and richer, and the income of commune members became higher and higher. Last year, the entire brigade realized over 350,000 yuan in income from tea, or 56.4 percent of the total income, an increase of 40 percent over the previous year. An increase of 90 yuan in income per person was realized from tea alone. The distributed income per person of the entire birgade was 404 yuan, an increase of 155 yuan over 1979. Now the personal savings of the entire brigade has reached over 250,000 yuan, an average of 1,225 yuan per family.

Fourth, business management was done well and efforts were exerted to reduce production cost. Last year, the Jiaoting Brigade of Wuyi Commune, Zongan County, produced high yields, the cost of production was low, the contribution was great, and the income was large. The average income per person of the entire brigade was 308 yuan. This brigade paid attention to economic accounting while increasing production of food grains and increasing income and paid attention to economic results. It undertook to increase income, on the one hand, and to cut expenditures, on the other. It undertook scientific fertilization, conserved the use of seeds and held down production expenses, and it paid a lot of attention to management and use of farm machinery. Accounting was carried out for each of the 30 tractor units of the entire brigade, the responsibility was assigned to individuals, and noticeable results were achieved. In repair costs of farm machinery alone, a reduction of 6,600 yuan was realized. The cost of each dan of rice grains was only 3 yuan 6 jiao 2 fen--lower than other brigades.

Fifth, a leading team was established whose ideology was liberated, that understood management and was skilled in management. Woman secretary Huang Suhua [7806 4790 5478] of the party branch of Huiyao Brigade, Sanming city, was skilled in business management. She talked with the masses and selected several people who had policy making ability, a skill in economics, and production experience to serve as the leading team for the birgades and the production teams. Their thinking was relatively liberated; they conscientiously implemented the series of policies, principles and guidelines since the Third Plenum; they respected the autonomy of the production teams and the wishes of the masses; they suited measures to local circumstances; and they implemented the joint production responsibility system. Last year, the average income per person of this brigade was 580 yuan.

At present, although the number of brigades and production teams with an average income per person of over 300 yuan is not large, the significance is profound and the experience is precious. The experience not only showed us the bright future of a wide number of farm villages, but at the same time it vividly and forcefully showed that the party principles, guideline and policy since the Third Plenum are completely correct. They can fully develop the superiority of the socialist collective economy.

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TIPS PROVIDED FOR CONTROL OF RICE BLAST

Fuzhou FUJIAN RIBAO in Chinese 6 Jul 81 p 1

[Article by Zheng Jin [6774 6930], Plant Protection Department, Provincial Department of Agriculture: "Eradicate Sources of Disease Germs to Guard Against Blast in Late Rice Crop"]

> [Text] Editor's Note: Rice blast has already caused serious damage to the early crop in some places this year. We must learn a lesson and take active measures to guard against outbreaks of rice blast in the late crop and in future years. This article deals with ways to eradicate sources of rice blast disease germs now.

Rice blast is a disease caused by the invasion of rice blast disease fungi. The sphores of these disease germs can float around in the air, and use wind and rain as carriers to spread to the leaves, panicles, nodes, and seeds of paddy rice. When these spores obtain suitable temperatures (24° - 28° C) and sufficient humidity (above 90 percent), they sprout and invade the plants, requiring only 6 to 8 hours at the fastest to invade the body of a rice plant, absorbing large amounts of the rice's nutrients and moisture, and propagating themselves. Within 4 or 5 days following invasion, speckles appear on the invaded part, a new generation of spores is produced, and the cycle begins again with repeated dissemination and continuous infection.

Following harvest of rice that has been invaded by disease germs, the disease germs remain dormant in the rice straw and among the grains. Under dry conditions these disease germs can survive until the growing season 2 years later, and the survival rate is even longer for those fungus hypha that lie dormant in the tissues. When the right conditions of temperature and humidity come along, they can steadily produce spores, becoming the main sources of disease germs for the first outbreak of disease in rice.

This year rice blast is serious in the province's early crop, and though the reasons are numerous, the fundamental reasons are the weakness in resistance to disease of the varieties and the steady accumulation of sources of germs. Therefore, thorough eradication of germ sources constitutes a major link in comprehensive prevention and control measures for rice blast. The principal methods are as follows:

1. Handling of diseased rice straw. Infected rice straw is the main source of disease, and it must be thoroughly cleansed. Specific ways to clean it are as follows. 1. When rice straw is returned to the fields, the rice blast germs on the infected straw can live only a very short time in the paddyfield water and soil. Research reports say that the survival time for germs in paddyfield water is from 3 to 4 days only. If infected straw is buried in the soil 1 to 3 cun deep, the disease germs will die in about a day or so and be unable to transmit disease any more. Therefore, at the time the rice is harvested, diseased fields must be noted, and after the harvest, the rice straw from diseased fields should be promptly returned to the fields, the straw being returned to the fields even while the harvest is underway, watered and plowed under (or rolled under with a spiked wooden roller) so that it is all buried in the soil. This method both puts an end to the source of infection and also promotes full rotting of the rice straw as well as increased fertility. It deserves to be vigorously promoted. 2. All places using rice straw for fuel should pile infected straw separately, and then burn it, rather than strew it around. 3. Rice straw kept for use as cattle feed should be selected from fields that have not had the disease, and this straw should not be placed together with infected straw. Additionally, use of diseased straw to build sheds, to cover rice seeds to promote germination, or to tie bundles of seedlings preparatory to transplanting should be prohibited.

2. Disinfection of seeds. Disease germs on seeds are one of the sources of disease germs for rice blast on seedlings. Diseased seeds should be disinfected before being sown. Seeds from elsewhere should be strictly disinfected before sowing.

Inasmuch as there are presently no especially efficacious pesticides for use in disinfecting seeds, 4,000 parts of 80 percent solution of "402" anti-fungus solution should be used to soak the seeds for 48 hours. Alternatively, 1 part in 50 of formalin may be used to soak the seeds for 3 hours. Otherwise, seeds may be soaked in cold and hot water baths, the seeds being soaked first in cold water for from 6 to24 hours after which they are soaked in a 55°C hot bath for 5 minutes. All of these methods are very effective. Seeds that have been immersed in a pesticide must be washed with clear water before planting so as not to impair sprouting.

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PROVINCIAL RAPESEED PRODUCTION ACHIEVES HIGH LEVEL

Liberalized Policy, Responsibility System

Fuzhou FUJIAN RIBAO in Chinese 9 Jun 81 p 1

[Article combining reports received from Ye Jinchai [5509 6855 5865] et al of the provincial agricultural department: "Because of Liberalized Policy and Implementation of Many Forms of Responsibility System, Our Province's Rapeseed Production Increased 45 Percent and the Area of Planting Rape, the Unit Yield of Rapeseed and the Total Yield All Reach the Highest Levels in History"]

[Text] This year, our province realized a large-scale increase in rapeseed on the foundation of 4 consecutive years of increased yields. According to statistics of the provincial agricultural department, this year the value of the entire province's total yield of rapeseed is estimated at over 59 million jin, over 18 million jin more than last year or an increase of 45 percent, the highest level since liberation.

According to analysis by the agricultural department, this year's bumper harvest of rapeseed was mainly the result of a liberalization and stabilization of policy and the implementation of many forms of responsibility system, along with good weather since last winter which benefitted the growth of rape; this resulted in increasing the enthusiasm of the broad masses of commune members for planting rape. In the past, due to the influence of the "leftist" ideology, many localities unilaterally emphasized the planting of wheat, not allowing the communes and brigades to plant more rape and not allowing commune members to plant rape individually. After the Party's Third Plenum, the masses of cadres of many counties, communes and brigades liberated their ideology, broke away from the confines of the "leftist" ideology, respected the autonomy of the production teams, and suited measures to local circumstances in developing rape production; thus rapeseed increased in yield for 2 consecutive years. Last July, the provincial committee and the provincial government conscientiously summarized the experience of increased production of rape of the past 2 years, decided to further liberalize policy, and encouraged the collective and the commune members to suit measures to local circumstances and to plant more rape. After the task of sales to the state was completed, the surplus rapeseed was given back to the commune members for their own consumption. The current rapeseed procurement policy has been stabilized and not changed. The broad ranks of commune members boldly and calmly planted rape in a big way in accordance with the spirit of the documents of the provincial committee, bringing about the welcome scene of "three increases" in the production of rape this year. First, there was an increase in area. This year, the area of planting throughout the province reached 780,000 mu, an increase of 12 percent over last year and the highest level in history. The area of planting in the Jinjiang, Putian, Longxi regions increased about 50 percent over last year. The area of planting in Minqing, Zhangpu, Putian, Changtai counties expanded over onefold. Second, the unit yield of rapeseed increased. The average unit yield throughout the province increased 20 percent over last year. The per mu yield of Longhai County reached 120 jin, an increase of 64 percent over last year. Third, there was an increase in total yield. The total yield of the entire province is estimated to have increased 45 percent over last year. The total yield of Longxi region increased 1.3 times, and the total yield of Jinjiang region increased 90 percent.

Our province has been deficient in oil. The people in towns and villages have always had a short supply of edible oil. Now, bumper harvests of rapeseed have continued for 4 years, and especially with this year's large bumper harvest, this shortage has been alleviated. Many counties originally deficient in oil have basically become sufficient in oil. In many localities, communes, brigades or individuals which are "becoming rich by planting rape" have emerged. This year the six brigades in Luofang Commune, Liancheng County, received an income of 73 yuan per person from rape alone. Last winter commune member Lan Xinghui [5663 5281 6540] of the Xinshang Brigade, Guanzhuang Commune, Shanghang County, planted over 2 mu of rape, and this spring he harvested over 520 jin of rapeseeds; besides keeping 150 jin of rapeseeds for pressing oil for self-consumption, he sold over 370 jin to the state and received an income of over 180 yuan.

At present, commune members of each locality are happily selling rapeseed and rape to the state.

Procurement Plan Overfulfilled

Fuzhou FUJIAN RIBAO in Chinese 9 Jun 81 p 1

[Article by the reporting group of the provincial oil and tallow company: "Rapeseed Procurement Plan for the Whole Province Is Overfulfilled"]

[Text] According to statistics of the provincial food grains department by the end of May the entire province had procured over 15 million jin of rapeseed, completing this year's procurement plan for rapeseed with a surplus of 33 percent, an increase of 60 percent over the same period last year. After this spring's bumper harvest of rapeseed, the food grain department conscientiously implemented the policy of procurement of rapeseed and fulfilled the promise of higher prices as encouragement for surplus procurement; the enthusiasm of the broad ranks of commune members to sell rapeseed to the state was very high, and the quality of the rapeseed sold to the state was higher than that of last year. Large increases were recorded in yields in the regions of Longxi, Putian, and Jinjiang. The rapeseed sold to the state by commune members surpassed the planned procurement by onefold to eightfold.

Commune members of the rapeseed-producing regions this year produced higher yields, sold more rapeseed and also kept more oil. Recently, the price of edible oil in the agricultural markets at each locality had dropped. In some regions the price dropped by over 10 percent. At present, the cities and regions of Ningde, Sanming and Xiamen are striving to overfulfill the procurement task, while the farmers in other regions are continuing to sell surplus oil to the state.

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RAISING OF LONG HAIRED RABBITS URGED

Fuzhou FUJIAN RIBAO in Chinese 6 Jul 81 p 1

[Article: More than 100,000 Long Haired Rabbits in Fuding, Pinghe, and Shouning Counties; Number Raised Less Than 1,000 in 19 Counties; Provincial Agriculture and Foreign Trade Departments, Womens' Association, and Supply and Marketing Departments Convene Conference on Long Haired Rabbits; Call for a Good Job in Departmental Coordination and Active Support for Development of Long Haired Rabbits"]

[Text] The Provincial Department of Agriculture, the Provincial Bureau of Foreign Trade, the Provincial Womens' Association, and the Provincial Supply and Marketing Administration recently held a joint meeting in Fuzhou on production of long haired rabbits. Its purpose was the exchange and promotion of advanced experiences for the development of long haired rabbits. It called upon pertinent grassroots level units to intensify coordination and cooperation in an effort to develop more long haired rabbits.

Production of long haired rabbits is a feeding industry in Fujian Province with very good prospects for development. Since these four units held a joint on-site meeting for the first time in Fuding County during June last year, a great increase has taken place in the number of long haired rabbits being raised. Conference statistics show that during the first half of last year, the number of long haired rabbits being raised in the province totaled 1.08 million, but the number has increased to its present 1.38 million. As of the end of April, 112,000 jin of rabbit hair had already been purchased by the state. This amounts to a 54 percent increase over the same period last year.

The conference recognized that experiences during the past year in developing long haired rabbit production show that given active leadership, stable policies, and vigorous measures, long haired rabbits can develop very rapidly. The current problem is a need for every department to effect close coordination and do a good job of cooperation. The three counties of Fuding, Pinghe, and Shouning, which are now growing more than 100,000 long haired rabbits, as well as other advanced counties, agricultural, foreign trade, supply and marketing units, and womens' associations have done a large amount of work. Agricultural departments and womens' associations have organized mobilization of commune members to raise rabbits, and have coordinated with foreign trade departments to promote advanced techniques in raising rabbits. While doing a good job in purchases of long haired rabbits, foreign trade and supply and marketing departments have introduced large numbers of rabbit varieties, have distributed young rabbits, and have trained personnel to guide the raising of rabbits. In some counties, measures for support have been more flexible and diversified. In Fuding County, for example, while diligently carrying out provincially stipulated purchase price and award sales policies, methods such as protected prices and exclusive selling rights for superior varieties of young rabbits have been instituted. Key households that have raised more than 20 rabbits to adulthood, that have produced more than 10 jin of rabbit fur a year, and that have produced more than 100 young rabbits a year have been given recognition and material rewards. In order to give support to the raising of rabbits by new households, during the past year special interest-free loans of a half year's duration have been issued, and low priced rabbit cages provided. Now in the farflung rural areas of Fuding county has appeared a mass rabbit-raising movement with "three generations in the same house," "cadres taking the lead in raising," "raising by friends and relatives to relieve poverty," "women taking rabbits to raise after getting married," and the raising of rabbits by bachelors and households enjoying the five guarantees [children and infirm old persons who are guaranteed food, clothing, medical care, housing, and burial expenses by the people's commune]. The number of long haired rabbits raised in county total more than 240,000. The conference noted that the flourishing growth of long haired rabbit production in Fuding, Pinghe, and Shouning counties was [illegible] achieved by the work of one or two departments, but rather an accomplishment of all relevant departments and active coordination among the broad masses of commune members. The conference called upon them to summarize experiences, strengthen coordination, and expand accomplishments. It called for areas where development has been relatively slow to diligently study and spread the experiences in cooperation of departments that have done a good job, to clarify their own work responsibilities, and to actively arouse and support the broad masses of rural commune members to raise long haired rabbits.

A great imbalance currently exists in the production of long haired rabbits in Fujian Province as a result of different degrees of serious attention given in different places by the leadership mentality, and the differences in positiveness and activeness of relevant units' work. There is a great potential to be tapped. The delegates from various places who attended this conference have reported that of the 69 counties and municipalities in the province, those growing more than 10,000 long haired rabbits number 22 (three counties having more than 100,000 rabbits), and 19 counties have less than 1,000. Some counties have virtually none. In places where development has taken place rapidly, the disparity between one commune and another and one brigade and another is also very great. The conference asked that all jurisdictions give attention to two matters. First is the opening up of new areas for an expansion of rabbit raising. First of all, it is necessary to arouse the enthusiasm of pertinent departments in each of these places to get them to undertake the launching of and support to development of long haired rabbit production. Second is active promotion of advanced raising techniques in advanced areas, carrying out of improvements in species, and increasing the quantity and quality of rabbit hair.

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BRIEFS

COUNTY SUMMER GRAIN--By 15 August, Fuqing County, Fujian, had procured some 43 million jin of summer grain, overfulfilling its procurement target by 900,000 jin. [OW240042 Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 23 Aug 81]

AGRICULTURAL PRODUCTION--Gutian County, Fujian, encourages peasants to develop a diversified economy while paying attention to grain production. The county's 180,000 mu of double-crop early rice this year suffered from frost and plant diseases, resulting in lower output. To make up for the loss, the county expanded the acreage of double-crop late rice by nearly 20,000 mu, strengthened field management on 230,000 mu of single-crop rice and expanded the acreage of other grain crops by 12,000 mu. At the same time the county encourages commune members to grow mushrooms, edible fungus and tremella raise rabbits and so forth. [OW232154 Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 21 Aug 81]

FUJIAN SOYBEAN PRODUCTION--As of 3 August, Jingjiang Prefecture in Fujian had sold 7 million jin of soybean to the state, overfulfilling this year's procurement quota by 240,000 jin and exceeding that of the same period for last year by 1.08 million jin. This year the prefecture planted a total of 170,000 mu of spring soybean. [OW232154 Fuzhou FUJIAN RIBAO in Chinese 14 Aug 81 page not given]

CSO: 4007/556

DISASTER RELIEF IN DONGGUAN COUNTY FOLLOWING TORRENTIAL RAINS REPORTED

Guangzhou NANFANG RIBAO in Chinese 20 Jul 81 p 1

[Article by Feng Zhang [7458 4545]: "Powered By the Spirit of the Sixth Plenary Session of the 11th Party Central Committee, Bumper Late Crop Harvest Is Won. Following a Particularly Bad Torrential Rain, Dongguan Actively Launches Rescue Work"]

[Excerpts] Following a particularly bad torrential rain, the vast numbers of cadres and masses of Dongguan County, powered by the spirit of the Sixth Plenary Session, actively launched rescue efforts to restore production and recoup early crop losses from the late crop.

Between 5 pm on 29 June and 5 pm on 1 July, a torrential rain and a severe torrential rain fell on Dongguan County. Within 2 days, some places had 769.3 millimeters of rainfall or more, those getting rather less still receiving more than 200 millimeters. The maximum amount of rainfall in the cities and towns of the county was 73.1 millimeter per hour, an extremely rare occurrence. Inasmuch as this severe torrential rain came suddenly and violently, even though each jurisdiction did a great amount of rush rescue work, great damage was nevertheless sustained. Of the counties, more than 690,000 mu of early rice, 269,000 mu was innundated for a loss of 600,000 dan of paddy. More than 26,900 mu of late crop rice seedlings were also innundated for a loss of more than 20,000 paddy. Other crops such as peanuts, sugarcane, jute, lichees, and pondfish were also severely damaged. In addition 32 bridges were washed away, and six small mountain pools were destroyed. One hundred fifty-four houses collapsed, and 916 firewood sheds, pig and cattle pens, and other structures collapsed. County losses exceeded 30 million yuan.

Following the disaster, the County CCP Committee established rescue leadership teams sending out 24 teams to investigate the situation in 16 disaster-stricken communes and to organize post-disaster production. At the same time, the County CCP Committee also aroused units concerned to assemble a supply of cement, chemical fertilizer, lumber, diesel fuel, gasoline and such goods, plus disaster funds using the expedients of transfers, cutbacks, warehouse inventory, and borrowing in advance to make rapid deliveries to disaster-stricken communes and brigades. At an enlarged session of the County CCP Committee held from 7 to 10 June, the situation was analyzed and specific actions taken for late crop production to recoup losses.

Within 10 days, the county repaired 96 mountain pools, reservoirs, embankments, and bridges, and was in process of repairing 74 more. Also repaired was 8,337 meters of drainage and irrigation ditches. The county has rush harvested 500,000 mu of early crop rice amounting to 70 percent of the early rice crop area. Following check and authentication, the county has to resow 4,500 mu of late crop seedlings, and has already resown 4,285 mu.

In addition, all jurisdictions are devoting great attention to the restoration and restocking of fishponds. The county has arranged for supply of 8.4 million fry from elsewhere, and has transferred 8 million from within the county for timely replenishment of the ponds.

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CSO: 4007/531

BRIEFS

PORK, BEEF PRICE ADJUSTMENTS--Following approval by provincial and municipal units concerned, Guangzhou will begin today (20 July) an adjustment of retail list prices for pork of different quality, and of the sale price of pork and beef purchased at negotiated prices. This is in adjustment to changes in consumption habits of the masses. While maintaining unchanged overall retail list price levels for pork, every effort will be made to supply more lean meat, and to do more about the adoption of measures for increases and decreases in the price of different categories of pork (meaning separate sales of fat and lean meat). Following price readjustments, the price for lean meat will rise from the former 1.45 yuan per shijin to 1.65 yuan. Spareribs will increase from 1.03 yuan per shijin to 1.25 yuan. Lard will decrease from 1.22 yuan per shijin to 1 yuan. Fat meat will decrease from 1 yuan per shijin to 0.85 yuan. Commensurate readjustments will be made in the price of various processed pork products. Additionally, the retail price for choice meat purchased at a negotiated price will rise from the former 1.65 yuan per jin to 1.85 yuan. Partial commensurate readjustments will be made in other kinds of negotiated price frozen pork on the basis of the comparative price paid for different qualities of choice meat and prices in the area where the meat was produced. The retail price of fresh beef procured at negotiated price will rise from 2.15 yuan per shijin to 2.70 yuan. Units concerned have also stipulated that these are the highest retail price limits for various kinds of pork and beef, and that downward fluctuations are permitted. [Text] [Guangzhou NANFANG RIBAO in Chinese 20 July 81 p 1] 9432

CSO: 4007/531

BRIEFS

COUNTY ECONOMIC DIVERSIFICATION--Guiyang, 17 Aug (XINHUA)--Yuqing County, Guizhou, has been developing a diversified economy while paying attention to grain production. In 1980, the county's total grain output increased by 16 percent over 1979, and its output value from sideline production and economic diversification increased by 9.4 percent in the same period. The county produced more than 15 million jin of rapeseed this year, an increase of 93.7 percent over 1980, which was itself a record year. In the past year or so the county planted 2.06 million lacquer trees, bringing the county's total number of lacquer trees to more than 4 million, averaging more than 90 per household. [OW240107 Beijing Xinhua Domestic Service in Chinese 0148 GMT 17 Aug 81]

CSO: 4007/556

BRIEFS

CASH CROPS IN HEILONGJIANG--The area planted to sugarbeets, flax, sunflower, tobacco and other cash crops in Heilongjiang this year is 15.6 percent larger than last year's. All these crops are growing well. Twenty four counties have been designated as sugarbeet bases, growing a total of 3.58 million mu of sugarbeets. To improve the quality of tobacco, 26 counties have become tobacco bases with a total tobacco area about twice as large as last year's. [Harbin HEILONGJIANG RIBAO in Chinese 18 Jul 81 p 1]

PRICE OF BEEF CATTLE UP--With the approval of the Provincial Government, a circular was recently issued jointly by the provincial Price Bureau and Foreign Trade Bureau of Heilongjiang, stating that beginning 1 August, the beef cattle procurement price paid by the state would be raised once again by an average of 7 cents [0.07 yuan] per jin of gross weight. The circular further stipulated that following the rise in the procurement price, the market price of beef would not be changed. [Harbin HEILONGJIANG RIBAO in Chinese 18 Jul 81 p 1]

HEIHE PREFECTURE WHEAT--Wheat growers in Heihe Prefecture of Heilongjiang are adopting flood-combating measures prior to wheat harvesting, which usually takes place during a rainy season. Statistics showed that the annual loss of wheat due to waterlogging in past years was about 10 percent of the total annual output. For 1980 the loss was as high as 100 million jin. The wheat area in this prefecture this year accounts for 57 percent of the total grain-soybean area, and the number of harvest combines that are in good working condition and are ready for the wheat harvest number 1900 this year, a 51-percent increase over 1980. [Harbin HEILONGJIANG RIBAO in Chinese 21 Jul 81 p 1]

CSO: 4007/555

REVIVAL OF FLAGGING HYBRID RICE IMPETUS DISCUSSED

Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 7, Jul 81 Rear Cover

[Article: "Provincial Hybrid Rice Conference Convened at Wuchang"]

[Text] From 12 to 16 May, the Provincial People's Government held a provincial hybrid conference at Wuchang. A total of 109 delegates from all prefectures and municipalities, comrades in charge of agriculture in 46 counties, farm bureau chiefs, delegates from provincial departments, schools, and news units, and experts and professors attended the conference. The conference was hosted by Yang Chunting, [2799 2504 0080], deputy director of the Provincial Agricultural Commission, Liang Jiurang [2733 0036 6245], director of the Provincial Academy of Agricultural Sciences, and Zhao Chengwu [6392 2110 2976], deputy director of the Provincial Bureau of Agriculture. Provincial CCP Committee Secretary Huang Zhizhen [7806 4249 4176], and Deputy Provincial Governor Wang Hanzhang [3769 3362 3361] made important speeches at the conference. The conference studied relevant documents, heard representative statements from several delegates, listened to the scientific and technical reports of experts and professors, and conducted enthusiastic discussions bearing on real issues.

Discussions at the conference acknowledged that hybrid rice possesses remarkable hybrid heteroses, and that adaptation of general methods to local situations for steady development of hybrid rice can bring about greatly increased rice output. Since hybrid rice was first promoted in cultivation over wide areas of Hubei Province in 1976, it has been grown on an accumulated 10.33 million mu in five years, and has produced a total of more than 1.16 billion jin of paddy for yields averaging increases of 113 jin per mu. The conference unanimously acknowledged that among improvements in paddy rice varieties, hybrid rice represented a major breakthrough following the short stem rices of the 1960's, and that development of hybrid rice is a major way for Hubei Province to increase grain output.

The hybrid rice areas of Hubei Province developed very rapidly during the first several years, rising from 300,000 mu in 1976 to 4.57 million mu in 1978. In 1978, however, as a result of damage done by drought and high temperatures, output from hybrid mid season rice was less than from conventional mid season rice, and subsequently the hybrid rice area gradually declined until by 1980, it had dropped to 1.2 million mu. The conference acknowledged that there were many reasons for this state of affairs. Subjectively, the main reasons were inadequate understanding of the characteristics of hybrid rice and its advantages. Understanding of its disadvantages was particularly incomplete. Sufficient understanding was also lacking about how to make the most of its advantages and what key links needed to be mastered for growing it under the natural conditions prevailing in Hubei Province. Consequently, in propaganda much emphasis was given to its advantages, but little to the conditions that had to be made ready for it. Insufficient emphasis was given to adaptation of general methods to local situations and a rational crop pattern. When output declined and the hybrid area decreased, prompt and vigorous action was not taken.

Finally, after summarizing the lessons of experience and improving understanding, the conference raised requirements and measures for future development of hybrid rice in Hubei Province. Delegates to the conference unanimously agreed that hybrid rice in Hubei Province must develop in accordance with a program of "active step by step adaptation of general methods to local situations." If hybrid rice is to be developed, several key links must be taken in hand, leadership strengthened, and a common understanding reached. There has to be parent pair propagation and seed production areas to do a good job of seed preparations. Technical mainstay cadres have to be trained so as to be able to master all the techniques involved in hybrid rice. Pertinent policies have to be resolved; subsidization of expenses for parent pair propagation and seed production has to be instituted as does revolving grain quotas and special use of chemical fertilizers.

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CSO: 4007/543

EARLY RIPENING VARIETIES OF AMBARI HEMP HYBRIDIZED

Wuhan HUBEI RIBAO in Chinese 6 Jul 81 p 2

[Article by Huang Hongjun [7806 4767 6511]: "Provincial Academy of Agricultural Sciences Breeds Two New Varieties of Ambari Hemp To Create Conditions For Ambari Hemp Production"]

[Text] The Cotton Institute of the Provincial Academy of Agricultural Sciences has bred new varieties of ambari hemp suited to climatic conditions in Hubei Province, namely "6014" and "6004."

Ambari hemp production has developed rapidly in the province in recent years, the area planted to it amounting to more than 200,000 mu. In 1980, output totaled more than 600,000 dan (a record), permitting not only self-sufficiency but the export last year of more than 8 million gunny sacks. The major problem in amberi hemp production in Hubei Province has been varieties suited to climatic conditions in the province. Because they were not suited to climatic conditions in the province, varieties introduced from Guangdong, Guangxi, and Fujian provinces would not fruit, requiring the province to bring in from elsewhere more than 1 million jin of ambari hemp seeds annually, an expenditure of more than 1.5 million yuan being required for this purpose alone. Solution to the problem of self-sufficiency in ambari hemp seeds was an urgent task for the development of ambari hemp production in the province. In view of this situation, the Cotton Institute of the Provincial Academy of Agricultural Sciences began an appraisal of introduced varieties in 1978, systematically selecting and hybridizing varieties, finally breeding medium ripening ambari hemp varieties "6014" and "6004", which produce a high output of fiber and are able to fruit when grown in Hubei Province, thereby creating conditions for further development of the province's ambari hemp production.

"6014" and "6004" were test planted in Zaoyang, Mianyang, Qianjiang, Jianli, and Shishou counties where they made a fine showing, producing greater average yields than comparable variety "Qingpi No 3." "6014" produced average yields of 426 jin per mu, and "6004" averaged yields of 409.5 jin per mu. These two strains can produce an average of about 100 jin per mu of seeds.

Sown in late April or early May, "6014" and "6004" may be harvested between late October and mid-November, the time of harvesting being about one month earlier than for "Qingpi No 3," thus occasioning no delay in sowing of winter crops and making them suitable for vigorous promotion in Hubei Province.

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GRAIN PRODUCTION--The annual grain production target for Hubei this year is 37-38 billion jin. To reach this goal, great efforts in field management of intermediate and late rice crops are essential. Due to persistent droughts earlier this year, the areas sown to early and intermediate rice were somewhat reduced; and, therefore, the production outcome of the double-cropping late rice crop will be an important factor for reaching the annual grain production target. In the past, double-cropping late rice was planted in some localities that were not suited to this crop. Following several years of readjustment, the current area planted to this crop has been reduced to 13.7 million mu. [Wuhan HUBEI RIBAO in Chinese 20 Jul 81 p 1]

CSO: 4007/555

BRIEFS

EARLY RICE--Wujiang County, Jiangsu, has reaped a bumper harvest from its 490,000 mu of early rice. The average per-mu yield is 13 percent higher than last year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 22 Aug 81]

COTTON HARVEST--The supply and marketing departments in Jiangdu County, Jiangsu, has set up additional procurement stations in the county in preparation for a bumper harvest from the county's 70,000 mu of cotton planted this year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 22 Aug 81]

COUNTY MAIZE--Xinyi County, Jiangsu, has reaped a bumper harvest of maize with total output reaching 91 million jin this year. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 23 Aug 81]

SILKWORM COCOON PRODUCTION--Jiangsu produced 764,000 dan of silkworm cocoons in 1980 at an annual rate of increase of 120,000 dan per year since the conclusion of the Third Plenary Session of the 11th CCP Central Committee. [Nanjing XINHUA RIBAO in Chinese 21 Jul 81 p 1]

PEANUT AREA EXPANDED--The area planted to peanuts in Jiangsu is more than 1.56 million mu, one of the largest in the past 10 years, and an increase of 300,000 mu over last year. Production responsibility systems have been adopted in peanut growing communes, and scientific farming methods are being stressed in various peanut producing districts, making the peanut production situation one of the best in many years. [Nanjing XINHUA RIBAO in Chinese 19 Jul 81 p 1]

CSO: 4007/555

BRIEFS

COUNTY LATE RICE--Linchuan County, Jiangxi, has grown more late rice this year. It has increased the acreage of late rice by 12,000 mu over 1980 with total acreage reaching 508,000 mu. It has also grown some 4,900 mu of coarse grain and soybean and 662 mu of sweet potato, and accumulated 2.5 million dan of manure. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 23 Aug 81]

EARLY RICE--People in Xiushui County, Jiangxi, have completed harvesting the county's 336,000 mu of early rice. The total output this year is 10 percent higher than last year and over 10 million jin higher than 1979, the former peak year. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 17 Aug 81]

CSO: 4007/556

BRIEFS

XILIN GOL LEAGUE LIVESTOCK--Hohhot, 17 Aug (XINHUA)--Xilin Gol League, Nei Monggol, has done very well in animal production this year. According to statistics, the total number of livestock in the league has reached more than 7,147,000 head this year, overfulfilling target by some 640,000 head. This year the league has raised more than 2 million young animals, or 30 percent over target, and the survival rate of young animals has reached 88.9 percent. The league's privately owned livestock this year has grown to more than 1.18 million head, an increase of 51.4 percent over the past year, averaging 6.6 head for each person. [OW240115 Beijing Xinhua Domestic Service in Chinese 0126 GMT 17 Aug 81]

CSO: 4007/556

BRIEFS

GRAIN OUTPUT--Yinchuan, 15 Aug (XINHUA)--Since the system of fixing farm output quotas on a household basis was introduced in the spring of this year, 21 production teams of Taole County, Ningxia, have increased their total summer grain output by 65.3 percent over last year. The amount of food grain distributed per person during the summer averaged 400 jin or double last year. These 21 production teams relied on resold grain, loans and relief in the past. Taole County has a total of 79 production teams. [OW240055 Beijing Xinhua Domestic Service in Chinese 0047 GMT 15 Aug 81]

CSO: 4007/556

SHANDONG

PROTEIN ENHANCEMENT OF STEMS FED LIVESTOCK EXPLAINED

Jinan DAZHONG RIBAO in Chinese 11 Jul 81 p 2

[Article: "Basidiomycete Multiplies Protein Content of Plant Stems. Feeding of Hogs With 15 - 20 Percent Bacterial Feed Increases Weight by 15 Percent. Microbiology Institute of Shandong University Wins Achievement of Practical Value"]

[Text] The Microbiology Institute of Shandong University has won an achievement of practical value in using basidiomycetes in the fermentation of the stems of cereal crops, thereby increasing the protein content of the stems from between 2 and 4 percent to between 9.7 to 11.2 percent. Experiments show that when hogs are fed with a feed containing between 15 and 20 percent of these bacteria, their weight increases by 15 percent as compared with feeds to which these bacteria have not been added. Examination following slaughter, and performance of direct acute infection experiments on white mice, showed no toxic or other abnormal effects.

The Microbiology Institute of Shandong University was one of the earliest units in the country to undertake research on cellulose weishengwu [4850 3932 3670]. As long ago as the early 1970's, they proposed the use of basidiomycete to increase the protein content of stems. After the state assigned this research task to Shandong University, active research began with Professor Wang Zunong [3769 4371 6593] guiding two young lecturers, Gao Peiji [7559 1014 1015] and Ma Guirong [7456 2710 2837]. Following wideranging collection of bacteria species and continuous experiments, finally three basidiomycetes with fairly strong ability to break down fiber and xylem, converting it to fairly large amounts of bacteria protein were selected. Innoculation with these three basidiomycetes of unsterilized powdered cereal grass stems that have been treated with 3.5 to 5 percent aqueous ammonia at 15° to 20° C for 20 to 30 days produces bacteria feed containing between 9.7 and 11.3 percent protein, with a xylem breakdown rate of between 14.8 and 17.5 percent, and a cellulose breakdown rate of 20.3 to 34 percent. Chemical analysis of protein contained in this bacteria feed shows the presence of substantial amounts of 8 of the 10 amino acids essential to livestock, and fairly small quantities of the other two. Inasmuch as the technique for producing this kind of bacterial feed is fairly simple, in the course of experiments in rural villages some educated youths were able to master it after study.

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CSO: 4007/539

QUALIFIED SUCCESS IN TISSUE CULTURING OF CHINESE CATALPA REPORTED

Jinan DAZHONG RIBAO in Chinese 11 Jul 81 p 3

[Article by Culturing Laboratory, Provincial Forestry Institute: "Tissue Culturing of Chinese Catalpa by Provincial Forestry Institute to Expand Propagation of Catalpa Trees"]

[Text] The Provincial Forestry Institute has employed tissue culturing methods to produce Chinese catalpa sapplings, which have remained alive following transplanting and have reached heights of 7 to 8 centimeters. Success in this experiment both shortens propagation time required for Chinese catalpa trees and provides conditions for the growing of large numbers of catalpa trees.

Catalpa trees are a tree variety growing in Shandong that produces excellent lumber. They may reach a height of 30 meters and a girth of from 60 to 200 centimeters. Because they grow straight, are rot resistant, and easy to process, the wood from these trees is commonly used in construction, for making furniture, wagons, and cabinetmaking. However, because catalpa trees "flower but do not set seeds," for a long time they have been propagated only through root tillers. Not only is it difficult to breed superior varieties in this way, but growing of large numbers is prevented. For the past several years, the departments concerned in the province have used river catalpa [3109 2825] as a stock for the grafting of Chinese catalpa. However, because of the need to grow stock first, two years were required to grow sapplings, thus limiting the expansion of propagation. Consequently, in 1979, the Provincial Forestry Institute began experiments with tissue culturing to culture catalpa trees. From a 15 to 16 year old catalpa tree, they selected for cultering and induced-growth sturdy one year old branches on which leaves and tender stems had just begun to bud but had not yet developed. As a result, as of the end of last year, they had cultured more than 3,000 green seedlings, and 72 complete sapplings. After being transplanted from test tubes to flower pots, though only two have survived for one reason or another, some experience has been gained. At present, efforts are underway to improve the condition of equipment for research in increasing the survival rate.

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CSO: 4007/539

COTTON'S LIGHT ENERGY NEEDS IN SHANGHAI-HANGZHOU BAY AREA DETAILED

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE & TECHNOLOGY] in Chinese No 3, 5 Jun 81 pp 11-13

[Article by Pang Zhenchao [1690 2182 3390]: "Analysis of Light Energy For Directly Sown Cotton Following Wheat Harvest in Suburban Shanghai and on Both Shores of Hangzhou Bay"]

[Text] The Shanghai suburbs and both shores of Hangzhou Bay are part of the cotton growing area of the Yangtze River basin. Climatic conditions and the farm systems are virtually identical, winter crops (wheat, barley and naked barley plus rape) are grown just ahead of the cotton crop. For a long time it has been customary to sow cotton as a companion crop in the wheat fields, but in recent years a gradual change has taken place whereby seedlings are grown for transplanting after the wheat or barley crops have been harvested, while at the same time experiments have been conducted in the direct sowing of cotton after the wheat or barley harvests.

Some people maintain that when cotton is directly sown following wheat or barley harvests, yields are neither high nor consistent, nor is quality good. Experiments during recent years show, however, that so long as the laws of growth for the direct sowing of cotton after the wheat or barley harvest are mastered, and proper farming techniques used, high yields can be achieved. In Pinghu County's superior varieties farm, for example, in 1975 test planting of 15 mu of directly sown cotton brought yields of 201.1 jin per mu of ginned cotton. In 1976, the Chenshan Production Brigade of Huangshan Commune in the same county obtained yields of 141 jin per mu of ginned cotton from the direct sowing of cotton on 37 mu following the wheat harvest. In 1977, yields were 148 jin per mu of ginned cotton from 97.2 mu. Experiments on direct sowing of cotton following the wheat harvest conducted by the Ciqi County Cotton Institute brought yields of 149.8 jin per mu of ginned cotton in 1975 (Sumian No 3). In 1976, yields were 105.5 jin per mu of ginned cotton (Sumian No 3), and 117.9 jin per mu (Xuzhou 142). In 1977, yields were 80 jin per mu of ginned cotton (Sumian No 3), and 111.5 jin per mu (Xuzhou 142). In 1978, yields were 195.6 jin per mu of ginned cotton (Sumian No 3), and 249.4 jin per mu (Xuzhou 142), all fairly high yields. Tests performed by units concerned showed the quality of cotton directly sown following the wheat harvest to have no apparent differences from companion cropped cotton. The institute analyzed heat conditions in Ciqi County. During the growing season for cotton directly sown following the wheat or barley harvest (from the time of sowing until the plants are pulled up), the accumulated temperature from days averaging ≥ 12°C amounts to 3,900°C or more, meaning that conditions exist for yields of 100 jin per mu of ginned cotton. The growing season for directly sown cotton following the wheat harvest in that county for the period 1954-1978 had accumulated temperatures from days averaging ≥ 12°C of more than 3,900°C. Years of accumulated temperatures of more than 4,000°C totaled 84 percent, meeting the aforestated conditions.

Certain heat and moisture conditions are necessary for growth and development, and to get a certain yield from cotton. However, fundamentally speaking, light energy is the energy source whereby crops carry on photosynthesis to produce yields. Research has shown that when plants carry on photosynthesis, they use only 400-700 microns of light energy in the visible spectrum of solar radiation, i.e., the effective rays for photosynthesis. Because of the delay in the growing season occassioned by the direct sowing of cotton following the wheat or barely harvest, changes in the time of growth, and differences occur in the effective rays for photosynthesis. This article analyzes, from the angle of light energy, light energy supply problems for cotton directly sown following the wheat or barley harvest in the suburbs of Shanghai and both shores of Hangzhou Bay.

1. Growing Season for Cotton Directly Sown After the Wheat Harvest

When daily average temperatures climb above 12°C, cotton seeds begin to sprout, and temperatures above 20°C are suitable for growth. The beginning and ending dates for daily average temperatures 12°C and 20°C for Shanghai, Hangzhou, and Andong are shown in Table 1.

Table 1. Beginning and Ending Dates for Temperatures 12°C and 20°C in Shanghai, Hangzhou, and Andong

Place	Start Month/Day	End Month/Day	No. of Days	Start Month/Day	End Month/Day	No. of Days	Data Years
Shanghai	4/6	11/17	224	5/24	10/3	132	1873-1972
Hangzhou	4/1	11/17	229	5/16	10/2	139	1951-1970
Andong	4/3	11/19	229	5/21	10/5	137	1954-1970

Note: Starting and ending dates were derived by using the histogram interpollation method on average temperatures for numerous decades.

The table shows the dates for the beginning of average daily temperatures of ≥ 12°C to be during the first 10 days of April and the ending dates to be during the middle 10 days of November, for a continuous 220 to 230 day period. The beginning dates for temperatures ≥ 20°C are in mid to late May, and the final dates are in early October for a continuous 130 to 140 days. However, since temperatures change greatly during the spring season, usually cotton is not sown until mid to late April, the seedlings appearing in early May. In mid-November after temperatures drop to below 12°C, growth ceases. Since temperatures are low in the late season, and since early frost is always a possibility, plants are generally pulled up in early November. Thus, the period when companion cropped (or transplanted) cotton can carry on photosynthesis to produce yields is a period of about 180 days between May and October. Cotton that is directly sown after wheat is sown following the wheat harvest. In Hangzhou and Andong, the time for harvesting wheat and barley is during mid to late May (slightly later in Shanghai). Temperatures are high at this time, and seedlings appear fairly quickly after sowing. By early June seedlings are at a full stand, and by early November plants are pulled up. The period during which photosynthesis can be carried out to produce output is about 150 days between June and October. May to October is the growth period for cotton that has been companion cropped (or transplanted), and June to October is the growing season for cotton directly sown as the crop to come after wheat.

2. Effective Radiation for Photosynthesis and Utilization of Light Energy

There is presently no systematic test data in China or abroad about effective radiation for photosynthesis. Both China and Japan have used H.A. Yefeimowa's [0673 5481 5459 1216] [phonetic] formula for calculations:

$$Q_{PAR} = 0.43S + 0.57D$$

In this formula, Q_{PAR} is the effective radiation for photosynthesis. S is direct radiation, and D is scattered radiation.

Liu Hong [0491 3163 7311], of the Agricultural Meteorology Institute of the Chinese Academy of Agricultural Sciences has conducted observations using day long radiation measurements for photosynthesis produced in Japan, comparing these with computations made using the aforementioned formula. He discovered that over a long period of time, the calculated values showed only extremely slight differences from the measured values, and were suitable for use.

Use of the aforestated formula to make calculations using direct radiation and scattered radiation test data for Shanghai, Hangzhou, and Andong showed the effective radiation for photosynthesis during the growing period (June to October) for cotton directly planted after the wheat to be 26.71-29.51 kilocalories per square centimeter, amounting to $1.781\text{-}1.967 \times 10^8$ kilocalories per mu (See Table 2).

Table 2. Effective Radiation For Photosynthesis and Yields of Ginned Cotton During the Growing Season Following Wheat

	Effective Radiation for Photosynthesis			
Place	Kilocalories per square cm.	Kilocalories per mu	Ginned Cotton (Jin/Mu)	Data Years
Shanghai	29.51	1.967×10^8	139	1958-1972
Hangzhou	26.71	1.781×10^8	126	1959-1979
Andong	28.83	1.922×10^8	136	1963-1979

Figuring the quantity of energy required to form 1 gram of dry organic material to be 4.25 kilocalories, and the economic coefficient for cotton (ginned cotton) to be 0.15, when the effective radiation for photosynthesis in cotton is 1 percent, yields will be 126-139 jin per mu of ginned cotton. (Table 3).

Table 3. Utilization Rate of Effective Radiation By Cotton Directly Sown Following Wheat

Year	Effective Radiation for Photo-Synthesis	Ginned Cotton Yields When Utilization Rate is 1% (Jin/Mu)	Ginned Cotton Yields (Jin/Mu)		Utilization Rate	
			Sumian No 3	Xuzhou 142	Sumian No 3	Xuzhou 142
1975	25.46	120	149.8	—	1.25	—
1976	22.97	108	105.5	117.9	0.98	1.09
1977	25.34	119	80.0	111.5	0.67	0.94
1978	28.83	136	195.6	249.4	1.44	1.83

Ginned cotton yields of 141-201 jin per mu from cotton directly sown after a wheat crop in Pinghu County, when the utilization rate of effective radiation for photosynthesis was above 1 percent, demonstrate that the utilization rate of effective radiation for photosynthesis for cotton directly planted after a wheat crop can amount to around 1 percent.

The effective radiation for photosynthesis can vary from one year to another. The author figured the year by year effective radiation for photosynthesis for Shanghai (1958-1972), Hangzhou (1959-1979), and Andong (1963-1979). For Shanghai, it was 25.12-32.53 kilocalories/cm^2; for Hangzhou, it was 20.47-31.50 kilocalories/cm^2; and for Andong, it was 22.97-35.83 kilocalories/cm^2. When cotton's utilization rate of physiological radiation is 1 percent, yields of ginned cotton were 118-153 jin per mu in Shanghai, 96-148 jin per mu in Hangzhou, and 108-169 jin per mu in Andong. Except for individual years in Hangzhou, yields of ginned cotton were greater than 100 jin per mu. When the guaranteed rate for ginned cotton output was 50 percent, it was 136 jin for Shanghai; 124 jin for Hangzhou; and 133 jin for Andong. When the guaranteed rate was 80 percent, it was 132 jin for Shanghai, 117 jin for Hangzhou, and 126 jin for Andong (See plate.)

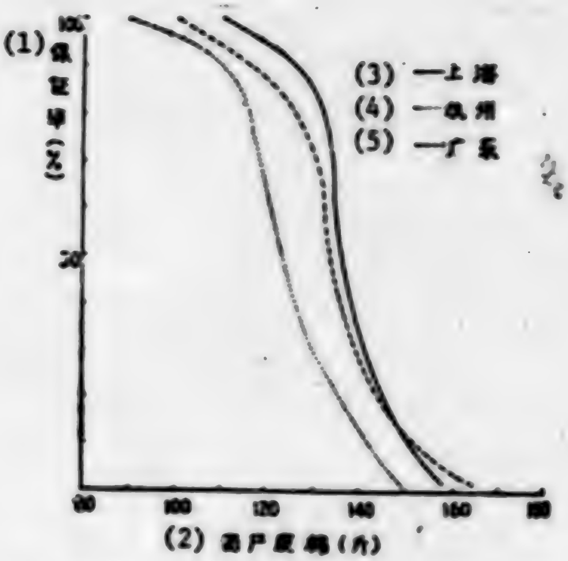
3. Effective Radiation for Photosynthesis For Various Growing Seasons

Investigative and experimental reports show the growing seasons for directly sown cotton in the aforementioned areas to be generally:

Growing Season	Companion Sown (Transplanted) Cotton	Cotton Directly Sown After a Wheat Crop
Sowing to sprouting	Late April	Late May
Sprouting to squaring	May to mid-June	Early June to early July
Squaring to flowering	Late June to early July	Mid-July to late July

Flowering to boll opening	Mid-July to Mid-August	Early August to Late August
Boll opening to pulling up of plants	Late August to late October	Early September to late October

On the basis of the foregoing periods, the effective radiation for photosynthesis during the growing season in Shanghai, Hangzhou and Andong was calculated. See Table 4.



(6) 图 上海、杭州、[illegible]

Key:

1. Guaranteed Rate (%)
2. Ginned Cotton Yields Per Mu (Jin)
3. Shanghai
4. Hangzhou
5. Andong
6. Plate. Guaranteed Rates for Yields of Cotton Directly Sown After a Wheat or Barley Crop in Shanghai, Hangzhou, and Andong

Table 4. Effective Radiation for Photosynthesis for Each Growing Season (Kilocalories/cm^2

	Sprouting to Squaring		Squaring to Flowering		Flowering to Boll Opening		Boll Opening to Pulling Up Plants	
Place	Direct Sowing	Companion Sowing	Direct Sowing	Companion Sowing	Direct Sowing	Companion Sowing	Direct Sowing	Companion Sowing
Shanghai	8.23	9.71	5.01	4.37	6.98	9.74	9.20	11.45
Hangzhou	6.89	8.38	4.69	3.69	6.53	9.18	8.51	10.55
Andong	7.25	9.48	5.08	3.99	7.11	9.96	9.12	11.35

Note: Years for data same as for Table 2.

Table 4 shows that the effective radiation for photosynthesis during each growing period for cotton sown directly after a wheat crop as compared with companion sown (or transplanted) cotton to be 1.2-1.4 kilocalories/cm^2 less during the sprouting to squaring period; 0.6-1.1 kilocalories/cm^2 more during the squaring to flowering period; 2.6-2.9 kilocalories/cm^2 less between the flowering to boll opening stage, and 2.0-2.3 kilocalories/cm^2 less during the boll opening to plant pull up stage. However, the effective radiation for photosynthesis during the squaring to flowering stage is conversely more for directly sown cotton than for companion sown cotton. In view of this characteristic, when directly seeding cotton after a wheat crop a medium to early ripening variety should be selected, density should be appropriately increased, and the time for topping should be advanced to promote the cotton's light energy utilization for increases in yields.

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SHANGHAI

TWO NEW HYBRID RICE VARIETIES CHARACTERIZED

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 81 p 33

[Article by Rice Propagation Laboratory, Crop Institute, Shanghai Municipal Academy of Agricultural Sciences: "New Rice Varieties 6366 and 109"]

[Text] (Number 1) 6366 (Intermediate Maturing Late Geng Rice)

Breeders: Fan Hongliang [4636 3163 5328], Lu Jiaan [7120 1367 1344], Gan Shougen [1626 1108 2704], Jiang Yusheng [3068 7183 3932], Hu Daojiang [5170 6670 3068], Zheng Zuling [6774 4371 3781], Cai Fugen [5591 4395 2704], and Yu Boqi [0205 0130 1477].

Breeding Process: In the spring of 1974, our institute used (Kengui x Keqing No 3) x Liming in multiple crossings, breeding being done three times between 1974 and 1976 in Shanghai plantings, and once on Hainan Island. In 1976, the F_4 generation was brought forward, and in 1977, this variety participated in a comparison of lines. In 1978, 1979, and 1980 it was test grown in the Shanghai suburbs, in Zhejiang, in Jiangsu, and in Anhui. In 1980, it participated in late season rice area experiments in Shanghai.

Properties and characteristics. Short stems; plant height around 70 centimeters; study and pliable stems; tolerant of fertilizer and resistant to lodging; small bottleaf angle; leaves short and wide, upright, and delicate; changes color well during late season; green stems turning yellow at maturity; moderate tillering strength; fairly high panicle formation rate. Panicles are about 14 centimeters long, each one containing about 70 grains of which about 60 are fully developed. Grains fairly small in size; per thousand grain weight about 25 grams. Both grain sheaths and tips of apicles straw colored; no awn; 83 percent polished rice rate; rice of good quality and good tasting. Strong tolerance of cold. During 1980, fruiting rate was approximately 85 percent in conditions of low temperatures and cold damage. Resistant to bacterial blight; moderately resistant to blast of rice; tolerant of salinity-alkalinity. As a late crop rice, growing period is about 135 days; as a single crop rice, growing period is about 155 days.

Test planting appraisal: Took first place in 1977 in comparative experiments with varieties for yields, producing the equivalent of 1,001 jin per mu, somewhat more than for the control, Jianong 15. Test planted in 1978 at five places in the

Shanghai suburbs, each place having a planting area of 0.5-1 mu, yields averaged 872.4 jin per mu. In test plantings at many sites during 1979 on an area of more than 100 mu, yields were 850 jin per mu. According to statistics from seven sites, yields from areas of 2 to 12 mu each averaged 892.5 jin per mu, with a maximum yield of 950 jin from one plot. In numerous test plantings in 1980 over an area totaling more than 2,000 mu, statistics from 15 sites showed that from planting areas of from 1 to 36 mu, the average increase in yields was 21.4 percent higher than for the local varieties with which it was compared. In Shanghai late crop rice growing areas, 10 sites showed increases in yields over the variety with which it was compared, and one showed equivalent yields, yields averaging 602.4 jin per mu, or 16.7 percent higher than for Shuangfeng No 1. Planted as a late rice in a single crop system at the Xuxing Commune Farm Science Station in Jiading County, yields amounted to 1,091 jin per mu. In the Linping area of Yuhang County in Zhejiang Province where it was compared with the locally promoted Wan 3-2 stock varieties in test plantings at five sites, 6366 had yields averaging 562.5 jin per mu, a 12.1 percent increase in yields over Wan 3-2. At five test planting sites of the Daqian Region Farm Techniques Station in Zhenhai County, Ningbo Prefecture, yields averaged 692.5 jin per mu, a 26.6 percent increase over the variety with which it was compared.

(Number 2) 109 (Early Maturing Late Geng)

Breeders: Fan Hongliang, Lujiaan, Zheng Zuling, Gan Shougen, Jiang Yusheng, Cai Fugen, Yu Boqi, and Ma Yongxiang [7456 3057 4382].

Breeding Process: Selected from a row of 1404 variety panicles for a late crop rice breeding problem at the Crop Institute of the Municipal Academy of Agricultural Sciences in the autumn of 1975. The parent pair combinations for 1404 were Jingyin 66 x Shuangfeng No 1. Reproduced the winter of the same year on Hainan Island. During the 4 year period 1977 to 1980, test planted in demonstrations at numerous sites in the Shanghai suburbs. In 1980, participated in late crop rice area experiments in Shanghai.

Properties and characteristics: Plant height about 90 centimeters. Plant shape fairly bushy; leaves fairly long; bootleaf upright; leaf color jade green; changes color well in late season. Moderate tillering rate; requires little fertilizer, and much fertilizer inclines it toward lodging. Approximately 70 grains per panicle, 60 of which are fully developed; fruiting rate about 90 percent. Grains in husks are oval shaped; grain husks and panicles are straw colored. Polished rice rate is about 84 percent. Quality of rice is superb. Strongly tolerant of cold in late season; moderate resistance to diseases; has a growth period of about 130 days; tolerant of late sowing and late planting; suitable for cultivation as a final late rice crop. Capable of producing consistently high yields.

Test planting appraisal: Sown on 22 June and transplanted on 7 August in test plantings at the Fengwei Commune Superior Varieties Farm in Jinshan County in 1977, yields were 739.2 jin per mu, 14.2 percent higher than those from the comparison variety, Jianong 15, which was sown and transplanted at the same time. The same farm planted 40.8 mu of it in 1978 for yields averaging 740 jin per mu, a maximum yield plot producing 869 jin. In test plantings at numerous sites in the Shanghai suburbs during 1979 over an area of more than 1,000 mu, yields were from 700 to 750 jin per mu, a high yield plot producing more than 800 jin. The Fengwei Commune Superior Variety Farm in Jinshan planted 26 mu for yields averaging 805.6 jin per mu. The Dongfeng Production Brigade of Fengwei Commune planted 54 mu for yields averaging 703.5 jin per mu. Oukuang Commune at Wuxi in Jiangsu planted 9 mu for yields averaging 776.7 jin per mu. An 0.6 mu plot on the experimental farm of the Shanghai Municipal Academy of Agricultural Sciences produced 813 jin per mu, 13 percent more than comparison variety Shuangfeng No 4. 1980 was a year of low temperature damage, but in municipal region testing, 11 sites had yields averaging 493.4 jin per mu, 7.0 percent more than comparison variety Shuangfeng No 4. More than 20,000 mu of it is grown in the suburbs of Shanghai.

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APPEAL MADE FOR INCREASED DRYLAND FARMING

Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 6, Jun 81 pp 18-19

[Article by Fei Duhong [2431 6757 4767]: "Yuncheng Prefecture Should Give Close Attention to Dryland Farming"]

[Text] Nine out of every ten years are drought years in Yunchang Prefecture, and for a long time it has been generally believed that the major contradiction in farming there is a lack of water, that the key to increased agricultural output is water. Every means has been used in water conservancy efforts. This year countless projects for sinking wells, digging ponds, building reservoirs, repairing ditches, and diverting the Huang and the Fen rivers have required investments of tens upon tens of millions, but the grain output situation remains not high, not consistent, and not rapid. This shows that placing reliance entirely on water in Yuncheng Prefecture merits study.

1. Limitations on Development of Wetland Agriculture

That wetlands yield higher outputs than drylands is an objective fact. In Yuncheng Prefecture, however, for a long time, no extensive increase in the wetland areas has been possible. This is because:

First, underground water has been excessively tapped. Underground water reserves in the prefecture amount to 840 million cubic meters, of which 750 million cubic meters has already been tapped. Plains areas irrigated by wells have tapped excessive and a marked decline has occurred throughout the prefecture in the underground water table. Take the Yuncheng-Yongji county region, for example. The lake and marshland areas of the 1950's are now virtually dry as the underground water table has fallen to below 30 meters, and there is virtually no further shallow water layer. During the 1960's all artesian wells were reported no longer working. In Xia County, where underground water resources are fairly good, moving water reserves amount to only 110 million cubic meters, of which 120 million cubic meters have already been exploited. As a result of the drop in the underground water table, the cost of lifting water for irrigation has increased commensurately. According to calculations by a production brigade, today's cost of watering 1 mu of land equals the cost of watering 3 mu of land during the 1960's. Even so, some places are still blindly sinking wells, and frequently for every deep well they sink, several shallow wells become useless. The above situation demonstrates that the lack of underground water is not a temporary problem; it is likely to get worse.

Second, exploitation of surface water is difficult. The water resources in Yuncheng Prefecture are fairly abundant. The Yellow river courses through eight counties; the Fen river courses through four; and the Sushui traverses six. But the Yellow river frequently lacks water; the Fen river regularly stops flowing, and the Sushui is virtually dried up. When the Huang and the Ren are low, the water can be lifted uphill, but raising the water is difficult, and frequently there is no water to raise. Though 10 electromechanical irrigation stations, large and small, have been built at places such as Zuncun, Jiamakou, Dayudu, and Xiaoyi, they far from satisfy the needs of agriculture for water. The prefecture annually requires about 3.2 billion cubic meters of water, presently only 1.2 billion cubic meters of which can be provided, more than 2 billion cubic meters being lacking.

Third, the financial and material resources are seriously inadequate. Development of wetlands requires capital, and whether provided by the state or the collective, vast sums of investment cannot be made in a short period of time for the construction of water conservancy projects. It is also necessary to consider the economic benefits of large scale raising and diversion of water for irrigation. In addition, we must not forget that Shanxi Province will be a future energy base, in the process of construction of which there will be great competition with agriculture for the use of underground water, and great destruction of underground water resources as well. The "water crisis" must be guarded against early. Consequently, sole reliance on increase in wetlands for the development of agriculture will make for a big future mess. But where is the way out for agriculture in Yuncheng Prefecture? The answer is that when the water route is blocked, take the dry road.

2. The Inevitability of Dryland Farming

Suggesting the inevitability of dryland farming proceeds, first of all, from the climatic characteristics of Yuncheng Prefecture. For almost 20 years now, annual precipitation has averaged about 540 millimeters, and because of its uneven and unbalanced distribution, this quantity has been substantially unable to satisfy ordinary crop consumption needs. An analysis of meteorological data for the past 28 years shows that spring droughts of varying severity have occurred every 6 to 9 years out of 10. Summer drought has occurred in 21 of these 28 years, severe drought occurring in 4 years. This is the prefecture of most severe summer drought in the province. Consequently, dryland farming will become a conspicuous feature of agriculture in Yuncheng. This will require that those responsible for guiding agricultural production establish a guiding mentality in which dryland farming is dominant, distributing leadership energy, manpower, financial and material resources to make the drylands hold a major position.

In terms of land area, as well, the dryland area is great, amounting to 58.7 percent of the total. To a certain degree, this regulates the form of agricultural production in the prefecture. When whether conditions are ideal, dryland harvests are good and the whole prefecture has a bumper crop year. When drought occurs and dryland output falls, the whole prefecture suffers. The problems of not high, not consistent, and not rapid agricultural output that I spoke of above, are the result, primarily of the drag that drylands exert. This raises a problem for our production departments and research units. They should give attention to research to find a series of techniques for increased production over large dryland areas, to gradually effect a change in th backward state of dryland farming.

In emphasizing the importance of dryland farming, we by no means overlook the role of wetlands. We say only that in the current situation in which no great development of wetlands is possible, and considering that communes and brigades do not have rich financial resources, it is necessary to do what is feasible, to surmount the guiding mentality that emphasizes wetlands and slight drylands, to face facts, and to place dryland farming in a commanding position. This is where the way out for farming in Yuncheng Prefecture lies.

3. Possibility of Good Dryland Farming

In establishing a guiding mentality in which dryland farming is dominant rather than passively resigning oneself to fate, and while being unable to change the dry climate, or being temporarily unable to convert drylands into wetlands, what other measures may be used to solve the moisture needs for crop growth. Yuncheng has a long history and abundant experience with dryland farming. It also possesses a great potential, and has many prominent representative examples. All that is necessary is diligent summarization and spread of these experiences, and doing a good job of dryland farming will be entirely possible. The most important of these experiences are as follows:

First, is storing of water and preservation of moisture, making full use of water from the sky. The experiences of Dongguanzhuang in Wenxi County in "spring use of summer rains" provide us a model for study.

Second, is seeking water in fertility by improving the soil structure. In order to strengthen the soil's capacity to store water and preserve moisture, the organic content of the soil has to be increased. Measurements show that cultivated land with an organic content of 1.12 percent will evaporate between 14 and 19 percent less moisture in a given period of time than soil with an organic content of 0.6 percent. The organic content of the soil in Yuncheng Prefecture is generally only about 0.6 percent. The main ways to increase the organic content of the soil are to grow a lot of green manure, to return stalks and stems to the fields, and to develop a livestock industry.

Third, is development of superior varieties, increasing crop capacity to withstand drought. Seed propagation work should also have its emphasis shifted to dryland farming, with extra attention going to propagation of various superior crop varieties suitable for growing in different types of drylands in order to meet the needs of developing dryland farming.

Fourth, is extension of the use of the new technique of using plastic sheet covering in farming.

At the present time, there is a great difference between dryland and wetland output in Yuncheng Prefecture, and the potential for dryland argiculture is very great. With a straightening out of the guiding mentality plus commensurate technical measures, great development in dryland farming is definitely possible.

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ZHEJIANG PROVINCE MARKS PROGRESS IN EXTENSIVE ELECTRIFIED WATER PUMPING

Hangzhou ZHEJIANG RIBAO in Chinese 4 Jul 81 p 1

[Article by Zhao Yu [6392 1946], Provincial Department of Water Conservancy: "Area Drained and Irrigated by Power Equipment Amounts to 17 Million Mu. Vast Strengthening of Ability of Zhejiang Province's Farmlands To Withstand Natural Disasters"]

[Text] Since the founding of the People's Republic, flourishing development has taken place in Zhejiang Province's drainage and irrigation using machinery and power equipment. As of the present time, the area drained and irrigated by power equipment amounts to 17 million mu, which is 86 percent of the area suited to the use of power equipment for drainage and irrigation.

Up until the time of Liberation, the rural villages of the province relied principally on wooden water wheels and portable bailing buckets. Because water conservancy facilities were not well maintained, upraised fields readily dryed out, and lowlying fields were prone to waterlogging. Drought and flood disasters occurred year after year. Following Liberation, under the leadership of the party and the People's Government, the people of the province pooled the wisdom of all, struggled arduously, and unflaggingly carried out construction of farmland water conservancy. More than 20,000 diked reservoirs, and more than 5,000 large and small hydroelectric power stations were built. The total amount of water impounded amounted to 26 billion cubic meters. Numerous streams were dredged so as to be able to bring in and release water, creating conditions for development of drainage and irrigation using power equipment. Now the entire province from its lakeshores to its seacoast, to the banks of great rivers, and from islands in the sea to inland hills, in every county and commune have power drainage and irrigation facilities. The power of the power equipment for drainage and irrigation amounts to 1.46 million horsepower, 150 times the amount during the period immediately following Liberation. It includes 640,000 kilowatts of electric motors, more than 45,000 kilometers of high voltage electric power lines for use in agriculture, 125,000 kilometers of low voltage power lines, and an annual quantity of water lifted amounting to 8 billion cubic meters.

The prolific development of machine powered drainage and irrigation endeavors has effectively increased the ability of the farmlands to withstand natural disasters. Jiaxing Prefecture on the Hangjia Lake Plain now boasts a machine operated drainage and irrigation station in every commune and brigade, and the area of machine operated drainage and irrigation amounts to more than 90 percent of the total paddyfield area. Since Liberation, this prefecture has triumphed over flood and drought disasters more than 10 times, and in concert with other measures to increase output, farm crop production has risen year by year. Per mu grain yields for the prefecture in 1964 exceeded the "National Program for Agricultural Development;" in 1970 they exceeded 1,000 jin, and in the great drought year of 1978 when the siutation was the same as in 1934, thanks to draining and irrigation capabilities, crop prospects were greatly strengthened and a bumper harvest in agriculture was won. Eight counties had 100 million jin increases in grain output; and great increases also occurred in outputs of silkworm mulberry, cotton and hemp.

Development of power operated drainage and irrigation endeavors has promoted improvements in agricultural techniques and has emancipated large numbers of the rural workforce. The saving in workforce occasioned by a change to machine powered drainage and irrigation from water wheels operated by human labor is alone estimated at 250 million man days per year throughout the province. The grain saving in the rural workforce set the conditions for increasing the multiple cropping index, for intensive farming, for the launching of diversification, and for deep and wideranging advances in production. Now, in all the places where machine powered drainage and irrigation has become a reality, more than 20 kinds of handicraft industry devices have been converted to electric power, and removal of grain husks, processing of agricultural byproducts and the grinding of fodder has been substantially electrified, and electric plowing, and electric light sources for insect control have been developed. Development of commune and brigade enterprises has increased the earnings of the collective economy.

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BRIEFS

PROFIT TARGETS--By the end of July 1981, the supply and marketing departments in Pingyang County, Zhejiang, made profits exceeding 1.83 million yuan, fulfilling the annual target for profits 5 months ahead of schedule. [Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 18 Aug 81]

EARLY RICE--Yuhuan County, Zhejiang, has reaped a bumper harvest of early rice. The total output has exceeded 62 million jin, topping last year's by more than 2 million jin. By 21 August, the county had also overfulfilled the procurement quota for this year's early rice by selling more than 9 million jin of early rice to the state. [Hangzhou Zhejiang Provincial Service in Mandarin 1040 GMT 22 Aug 81]

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II. PUBLICATIONS

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Outbreak Forecast of the Pine Caterpillar in Jiangxi Province ......Zhao Qingshan [6392 3237 1472], Forestry Research Institute, Chinese Academy of Forestry (123)

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Variation of Soil Salinity and Movement of Underground Water in relation to Preservation of Young Wheat Plants in Guanzhang East of Tianjin......Liu Nianzu [0491 1819 4371], Huang Youbao [7806 0645 1405] and Duan Menglian [3008 1322 5114], all of the Department of Soil Chemistry, Beijing Agricultural University (22)

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CSO: 4007/499

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TITLE: "Water Conservancy Construction and Pathways of Agricultural Development of North China Plain"

SOURCE: Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese No 7, 81 pp 11-18

ABSTRACT: From Yanshan in the north, Huaihe in the south, Taixingshan foot hills in the west to the eastern seashore, the North China Plain measures a flat 300,000 km^2, aside from some hills in Shandong. It is China's important grain and cotton production bases, with more than 2.7×10^8 mu of land under cultivation and a population of 1.5×10^8. It has suffered, for a prolonged period of time, from damages of drought, flood, and salts, however, which prevent further development of agricultural production. Since the liberation, measures regarding cultivation systems, crop breeds, chemical fertilizer, insecticides, and mechanization , over and above water conservancy and irrigation projects have been practiced,and brought some improvements, but the unit yield remains low, only about 200-300 jin/mu. The dry weather of recent years has caused the problem of water more glaring than ever, and the subject of transferring southern waters to the north, beginning to be proposed

[continuation of NONGYE JINGJI WENTI No 7, 81 pp 11-18]

in the 50's, is again being freshly and urgently debated. This paper asks the question of whether water deficiency is the key and only problem of agricultural production in North China. Conditions of water resources, salinization of soil, irrigated area per capita, unit grain production, conditions of application of organic and chemical fertilizers, condition of soil fertility, the need for protective forests versus the need for firewood, possibilities of auxiliary products, such as silk, and local development of water conservancy construction are analyzed. The question of whether or not the project of transferring southern waters to the north, is to be immediately and urgently implemented, the author maintains, should be evaluated with serious consideration of its effects on the development of the entire national economy and many other factors.

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TITLE: "Strengthening the Study of Agricultural Economics in the Work of Agricultural Regionalization"

SOURCE: Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese No 7, 81 pp 19-21,24

ABSTRACT: Agricultural regionalization is a comprehensive science, involving many fields of geography, agriculture, economics, etc. If the work of agricultural regionalization is to be of good quality, scientists of this work must approach it from all these angles and coordinate them. Of these, survey and research work in agricultural economics is an extremely important aspect. To support this viewpoint, the paper discusses at length problems of economics concerning (1) the utilization of agricultural resources; (2) reasonable structure of agricultural production and regional arrangement; (3) reform and reconstruction of agricultural technology; (4) construction of major bases of crops, forestry, animal husbandry, fishery, and commercial products; (5) regional differences in soil quality and profit and the reasonable distribution system between the state, the collective agricultural bodies; (6) ways of using economic leverage to promote the implementation of agricultural regionalization formulas. Beyond these, applications of boundary theory, the concept of function, the method of linear planning, the analysis of resources utilization, the determination of optimal production structure, and the reasonableness of the degree of specialization, etc. are also briefly mentioned as necessary contents of agricultural regionalization work.

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TITLE: "How Did China's State-operated Farms Turn Loss Into Profit"

SOURCE: Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese No 7, 81 pp 38-41

ABSTRACT: After 12 years of continuous operating losses, China's agriculture and reclamation enterprise reported a profit in the past 2 years: 3.97×10^8 yuan for 1979 and 5.36×10^8 yuan for 1980. The following measures are credited by the author for the turnabout: (1) Changes in administrative method and economic management promoted production initiative and positiveness of workers of State-operated farms; (2) Changing single production to multiple enterprise promoted full and reasonable utilization of natural resources and manpower; (3) Agriculture-industry-commerce joint enterprises united the production and economic systems which had been severed in the past; (4) Emphasis on scientific management improved the functions of sciences and technologies. Some details of these measures are mentioned.

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TITLE: "Agriculture of Mountainous Regions Should Positively and Steadily Proceed in the Direction of a Transition to Primarily Forestry and Animal Husbandry"

SOURCE: Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese No 7, 81 pp 49-53

ABSTRACT: This paper is a reprint of a paper originally appearing in JINGJI WENTI No 3, 1981 by Shanxi Provincial Research Institute of Social Sciences. The fact that geographically, mountainous and semi-mountainous regions occupy 81 percent of the area of Shanxi and the fact that more than 100,000,000 mu of the province are now barren mountains, deserted slopes, and wasteland but are suitable for afforestation and the deveopment of animal husbandry are the central theme of discussion. Production of commercial products through forestry and animal husbandry in exchange for imported grains is maintained as the solution to problems of low productivity, low standard of living, and lack of food and money in the province. Some policies, such as respecting the autonomy of production teams, reducing the burden of farmers, and training technicians with modern skills of agricultural technology are mentioned as essential for the goal.

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Meteorology

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TITLE: "Model Output Statistics, MOS, Method of Predicting Typhoon Rain andWind"

SOURCE: Beijing QIXING [METEOROLOGICAL MONTHLY] in Chinese No 7, 10 Jul 81 pp 2-5

ABSTRACT: Utilizing the forecast field provided in the WEST PACIFIC TYPHOON PATHWAYS NUMERICAL FORECAST MODEL AND RESULTS OF ITS PRELIMINARY APPLICATIONS (see COLLECTED PAPERS OF THE 1978 TYPHOON CONFERENCE) and some non-model output factors, several statistical maps are composed to serve as the comprehensive elements to establish a forecast equation to predict the wind and rain storms of the typhoon affecting the local area. This is a preliminary attempt of applying the MOS technique at a county level weather station. The arrangement of data and samples, the forecast elements, a correlation analysis of the forecast field, and the forecast equation are explained. The computation result demonstrates that the MOS element occupies a relatively significant portion of the forecast equation, with a clear physical meaning. Numerical forecast--weather analysis--the mathematical statistics method of forecasting is one tendency of development of the forecast work of county stations. With accumulation of experience and data, improvement will come with practice.

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TITLE: "The Effect of Polar Ice as a Cold Source and the Monsoon"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 7, 10 Jul 81 pp6- 8

ABSTRACT: There have been many theories concerning the problem of cold and heat sources of atmospheric circulation. One of these, proposed by a scientist of the USSR maintains that there are 4 heat machines. This conforms with the theory of modern system analysis. His 4 heat machines are: the poles and the tropics constitute the first; the oceans and continents constitute the second; evaporation and condensation of water vapor constitute the third; the uneven distributions of materials such as ozone in the stratosphere constitute the fourth. In reality, only the actions of the first two are taken into consideration in his researches. The present author names the first the planetary heat machine and the second the oceanocontinental heat machine. Following years of graphic analyses, the existence of a third becomes obvious. It is composed of the polar ice as the cold source and the low latitude ice-free region as the heat source. This heat machine has seldom been combined with the first two for analysis, due to mainly its longitudinal distribution, in the same direction as the planetary heat machine and being easily confused for it. This paper is a preliminary investigation of this third heat machine. Some related concepts are also defined and corrected.

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TITLE: "Discussions on Meiyu [Plum Rains] Problems"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 7, 10 Jul 81 pp 12-14

ABSTRACT: Studies on plum rains, that intermittent drizzles constituting the rainy season of the middle and lower reaches of Changjiang,had a beginning in the 30's, but a more advanced understanding was obtained in the middle 50's when high atmospheric data increased and an overall analysis of the relationship between circulation characteristic of East Asia and the seasonal change became possible. The problem of forecasting plum rains was proposed in the late 50's. Beginning with the No 8, 80 issue and ending with this paper, the journal published a total of 21 papers on the subject. This paper being in the nature of a summation, a note from the editor is attached to announce that the subject is closed for now and no more papers are to be published on it. Problems on the definition of Meiyu or plum rains, the precise determination of the plum rain season every year, and the time of concentration and the time of interruption of the plum rain season are discussed . Different opinions on these problems and the author's own viewpoints are included.

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TITLE: "Some Propositions on Weather Modification in China"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 7, 10 Jul 81 pp 15-16

ABSTRACT: Since the discovery of the effective cloud seeding agent, dry ice and silver iodide in 1946 in the USA, artificial modification of weather has had 30 plus years of history. At present, the field includes rain-making, hailstorm prevention, artificial reduction of the force of typhoon, fog elimination, and lightning elimination. Most countries, including China,devote most efforts in rainmaking and hailstorm prevention, however. In China, weather modification work began in 1958. To date,methodsof cloud seeding, surface launched silver iodide bullets, small rockets, and intra-cloud blast have been extended to all major provinces, cities, and autonomous regions, and contributions of these methods to adversity resistance and guaranteed harvest should be confirmed. In recent years, several tons of silver and a great deal of manpower have been spent every year in these efforts. The paper briefly analyses the doubtful economic benefits of weather modification expenditure and maintains that the tendency of other countries is to cut back the budget for these efforts, although, in the end, the author agrees with the opinion that in the long run it is a very promising science.

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TITLE: "Equivalent Cumulative Temperature and Its Practical Value"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 7, 10 Jul 81 pp 23-25

ABSTRACT: As a heat index, cumulative temperature reflects the regional heat resource and the development of crops. It is extensively applied in agricultural meteorology. Studies of recent years demonstrate that stable cumulative temperature varies from region to region, season to season, and year to year. Experiments under controlled conditions and nonlinear temperature models indicate that the cumulative temperature for crops to complete developmental activities and effective cumulative temperature are not constant, under different temperature intensity levels. On the bases of works of Japanese scientists, this paper considers the effectiveness of different temperature levels. The concept of equivalent cumulative temperature and its relationship equations are discussed. The temperature coefficient computation is compared with the stability of the equivalent cumulative temperature. Methods of applying equivalent cumulative temperature are introduced.

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TITLE: "Further Observations of JBE Attenuated Live Vaccines Used for Prevention of Stillbirths in Swine"*

SOURCE: Beijing WEISHENGWU XUEBAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 2, 1981 pp 174-179

TEXT OF ENGLISH ABSTRACT: 1. Two attenuated JBE live vaccines designated as 5-3 and 14-2 have been used for immunizing sows in early pregnancy. No untoward reaction was noted, and over 90 percent of the newborn piglets from the vaccinated mothers were healthy. These results suggest that these two vaccine strains were safe for the pregnant sows.

2. The serum neutralization antibody conversion rate of both vaccines in vaccinated sows was 80-100 percent, but that of the controls was negative. The vaccine strain 14-2, however, showed much better serum conversion and GMT.

3. The incidence of stillbirths due to infection with JBE spontaneously after

[Continuation of WEISHENGWU XUEBAO No 2, 1981 pp 174-179]

vaccination was significantly decreased, but not in the controls. Only 6.6 - 8.1 percent of newborn piglets from the immunized sows were stillborn, while there were 44.8 - 58.3 percent stillbirths from the controls. In addition, the vaccine strain 14-2 seems to be more potent than when the vaccine was diluted to 10^{-3}, however, this still provided good protection.

* Under the direction of LI Hemin [2621 3109 3046].

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TITLE: "Studies on the Techniques of Seed-potato Production. III. The Preparation of Antisera against Potato Virus Y and Methods of Diagnosis"

SOURCE: Beijing WEISHENGWU XUEBAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 2, 1981 pp 208-213

TEXT OF ENGLISH ABSTRACT: A partially purified preparation of potato virus Y was obtained by extraction with 0.1 M tris-HCl buffer, pH 7.0, containing 0.05 M EDTA or 0.5 M phosphate buffer, pH 6.5, and precipitation with 4 percent polyethylene glycol and one or two cycles of differential centrifugation. After PEG precipitation the pellet was resuspended in 0.01 M phosphate buffer containing 0.5 M urea for dispersion of aggregated viruses. This resuspended medium effectively prevented virus aggregation and usually produced higher yield of the virus.

[Continuation of WEISHENGWU XUEBAO No 2, 1981 pp 208-213]

This preparation was used to immunize rabbits through three successive intramuscular injections of virus suspension emulsified in Freund's complete adjuvant in three weeks. The antisera had titers of 1:2560-5120 as determined by means of the micro-precipitin test.

The later polystyrene particles were sensitized with purified r-globulin fraction from this antisera and the sensitivity of the test was determined. The minimum amount of 1.52 - 2.2 μg/ml purified PVY can be determined by this method.

The antisera have been used for the detection of infected sprouts and leaves of potatoes by micro-precipitin and micro-agglutination tests in comparison with local-lesion hosts S. demissum and P. floridana. The micro-agglutination tests were efficient and practicable.

Prepared antisera have been used for diagnosis of virus diseases in seed-potato production in Nei Monggol Autonomous Region since 1978.

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Veterinary Science

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TITLE: "Experiment With Amprol Plus for the Prevention and Control of Eimeria Disease of Chickens"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 7, 81 pp 1-5

ABSTRACT: In China Eimeria disease often causes death of large number of chicks; and there had been no special drug to combat it until recent years when Zoaline (North China University of Agriculture, 1977) and Robenidene (Research Institute of Animal Husbandry and Veterinary Medicine Shanghai Municipal Academy of Agriculture, 1978) were reported. They remain less than satisfactory. This paper reports an experiment with Amprol Plus, a product of the USA drug manufacturer MSD Company. It contains the 2 anti-Eimeria drugs of Amprolium and ethopabate. The drug, Robenidene (produced by Hubei Provincial Research of Pharmacology) is used as the control, and ovular sacs, supplied by 5 chicken farms of the Lanzhou Region used in the

[continuation of SHOUYI KEJI ZAZHI No 7, 81 pp 1-5]

experiment are identified to be 18 percent E. tenella, 11 percent E. brunetti, 8 percent E. maxima, 4 percent E. necatrix, 22 percent E. mivati; some E. acervulina, E. hagani, E. mitis, and E. praecox are also found. Amprol Plus and the control drug are mixed in the feed in doses of 63 ppm to 1000 ppm for continuous feeding lasting 20 to 60 days for the various groups. Control groups of infested and healty chickens fed with feed free of drugs are also established. Results demonstrate that at a dose of 125 ppm of Amprol Plus infestation of Eimeria of mixed species may be prevented and the effect of 250 ppm of this drug is even better. The drug produces no toxic reaction in chickens after continous feeding of 60 days with a dosage of 250 ppm or 20 days with 1000 ppm. Amprol Plus is found to be without effect for controlling E. maxima and E. brunetti, however. Comparing the 2 drugs, the anti-Eimeria strength of Amprol Plus is proved to be poorer than Robenidene. Robenideneis a broadspectrum anti-Eimeria drug and is highly effective for controlling the production of ovular sacs of Eimeriidae.

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TITLE: "Research on the Treatment of Japanese Fluke Disease of Goats With Pyquinone"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 7, 81 pp 5-7

ABSTRACT: Antimony agents have for a long time been regarded as the method for the treatment of fluke in men and animals, but they are very toxic and unsafe to use. Related domestic organizations have synthesized a nitro-sulfur cyanamide drug and pyquinone. Experimental results have proved them to be highly effective and of low toxicity. As subtitutes for stibinic drugs, they are very promising. The authors had established a procedure of using the nitro-sulfur cyanamide drug to treat schistosomiasis of water buffalo and goat, while a subsequent experiment proved that pyquinone is just as effective at half the dose. For the purpose of establishing a low dosage, safe, and effective procedure of treating goat schistosomiasis with pyquinone, the experiment, reported in the paper, is carried out. For the

[continuation of SHOUYI KEJI ZAZHI No 7, 81 pp 5-7]

treatment of artificially infested goats, which are introduced from non-epidemic regions, one dose of pyquinone by mouth of 60 or 40 mg/kg of body weight produced 100 percent reduction of parasite content in feces; the rate of reduction of the 20 mg/kg group was 99.8 to 100 percent; no obvious effect was observed from the 10 mg/kg and the 5 mg/kg groups.

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TITLE: "Observation of Analgesic Effects of Helium-neon Laser Irradiation on Nervi Mediani, Tibialis, and Infraorbitalis of Yellow Oxen"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 7, 81 pp 24-27

ABSTRACT: On the basis of a previous successful experiment of using helium-neon laser irradiation to produce analgesic effects on horses, this experiment is carried out on yellow oxen to compare the similarities and differences. Anodes soaked with 10 percent potassium chloride are attached around the anus of the ox to form the pain threshold tester, and needle puncture reaction and experimental surgery are also used to determine the analgesic effect. The ox is strapped on the surgical table, and 6mW x 2 helium-neon is aimed at the nerves from a distance of

[continuation of SHOUYI KEJI ZAZHI No 7, 81 pp 24-27]

of 50-60 cm. Results reveal that following irradiation, the pain threshold is obviously raised. Pain reactions to needle puncture at 14 points of the body are obviously dulled or disappear completely. Irradiation of ox nervi tibialis and infraorbitalis with helium-neon laser does not produce as good analgesic effects as the nerves of horses, however. About half of the oxen have various degrees of pain reaction when the skin is cut.

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TITLE: "Digital Joint Fusion Technique"

SOURCE: Lanzhou, SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 7, 81 pp 47-49

ABSTRACT: If a joint fracture occurs to an equine animal due to the action of certain violent force, the soft tissues of that joint may fester or become necrotic as a result of high temperature, further injury, infection, etc. This is a very difficult condition to treat. In clinical experimentation, they authors aply plastic surgery to destroy the surface of the joint first and to cut ends flat before the 2 bones are joined together and fixed in a plaster cast. After healing, the 2 bones become one and the joint in fact no longer exists. When digital joints of equine animals are thus treated, walking and weight-carrying ability of the animals is not greatly affected. With some training, their function may be restored. The paper describes the surgical procedure and gives the case history of one mule to illustrate the effectiveness of the treatment.

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TITLE: "Trace Element Contents of Pig Liver in Parts of the 4 Provinces (Cities) of Shanxi, Hebei, Shandong, and Tianjin"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 7, 81 p 54

ABSTRACT: The level of trace elements in the body of animals is the important basis for diagnosing trace element disease and the fundamental data for devising reasonable supplemental feed. It is closely related to trace element contents of the soil, water, and hay of a locality. The liver is the important metabolic organ of trace elements and the contents basically reflect the state of the various trace elements. In 1979, the authors carried out a survey of trace element diseases of animals in the Northeast. The present paper is a continued study. The iron, copper, manganese, zinc, cobalt, molybdenum, and selenium contents (ppm of dry weight) of pig livers tested are presented in a table in the paper.

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